Visualizing Space Points Using 3D Event Display

LArSoft Meeting

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3D Event Display

- The standad larsoft Event Display already has the capability to display 3D objects, including space points that are packaged into Prongs.
- I wrote a module called SpacePointFinder to store all space points found by SpacePointService into Prongs and add them to the event.
  - One Prong for each combination of clusters.
  - Not yet in svn.

Event Display Configuration

- In top level fcl file:

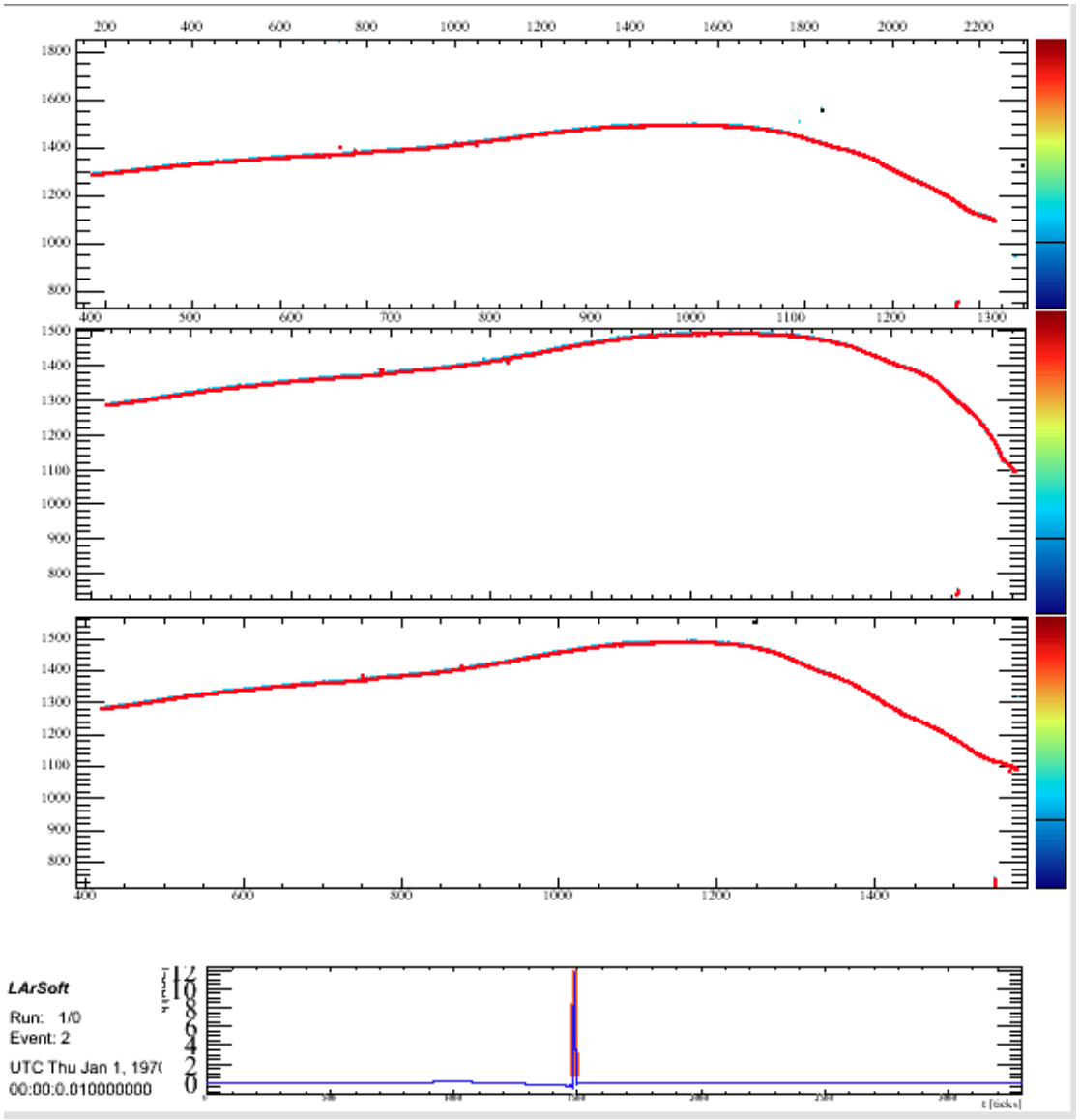
```
services:
{
  user:          @local::microboone_disp
}
services.user.RecoDrawingOptions.DrawProngs: 1
services.user.RecoDrawingOptions.ProngModuleLabels: ["spacepointfindernomc",
                                                      "spacepointfinder"]
services.user.RawDrawingOptions.DrawRawDataOrCalibWires: 1
```

- Choose “Display3D” option from Window menu.

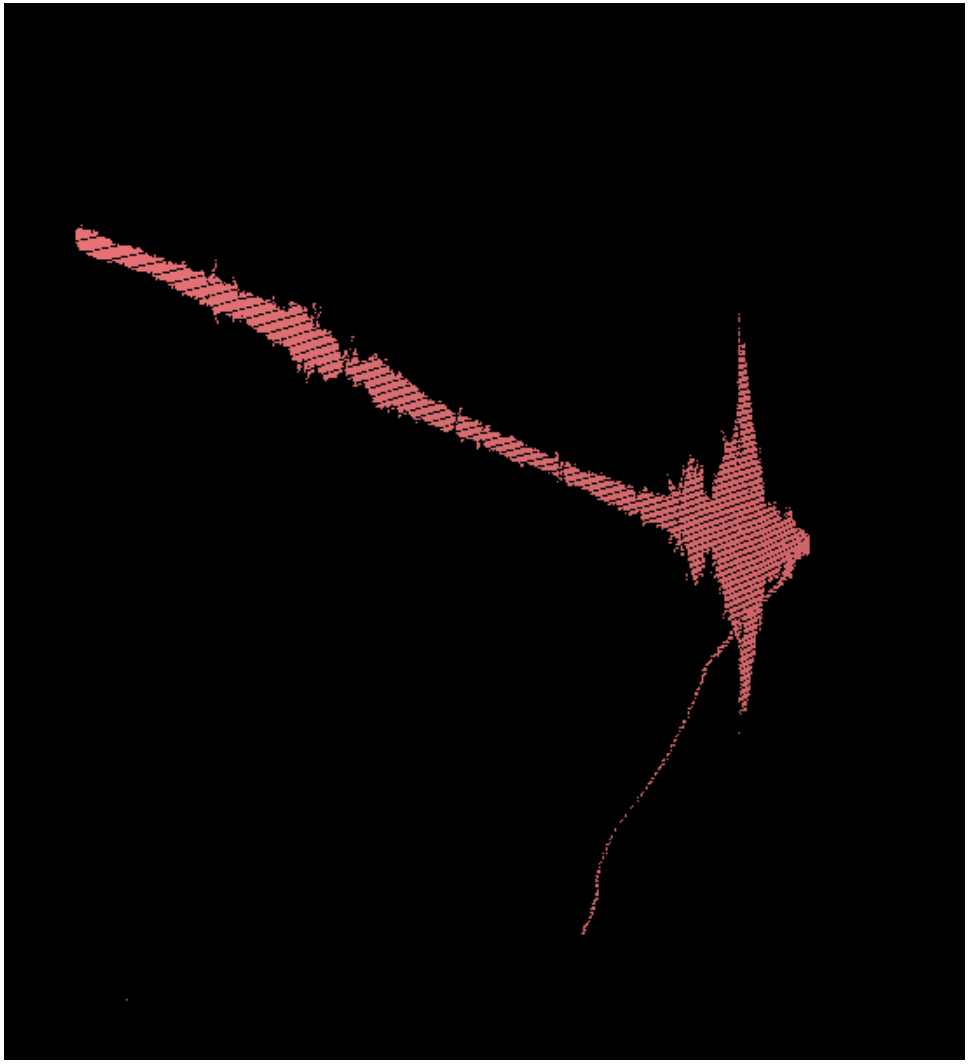
Issues with 3D Event Display

- Root supports three 3D viewers, open GL (ogl), X (x3d), and root native (pad).
  - Larsoft event display is hard-coded to use the open gl viewer.
  - Root documentation recommends to use the open gl 3d viewer.
    - Others are not well-supported, feature-poor, and/or under-performant.
  - Open GL 3D viewer seems to have its own issues related to finding a display with good enough open GL support.
    - It crashes the X server on my linux desktop.
    - It doesn't work with vnc.
    - Seems to work OK on my Apple laptop.
    - I wish the root team to put more effort into developing the X 3D viewer.

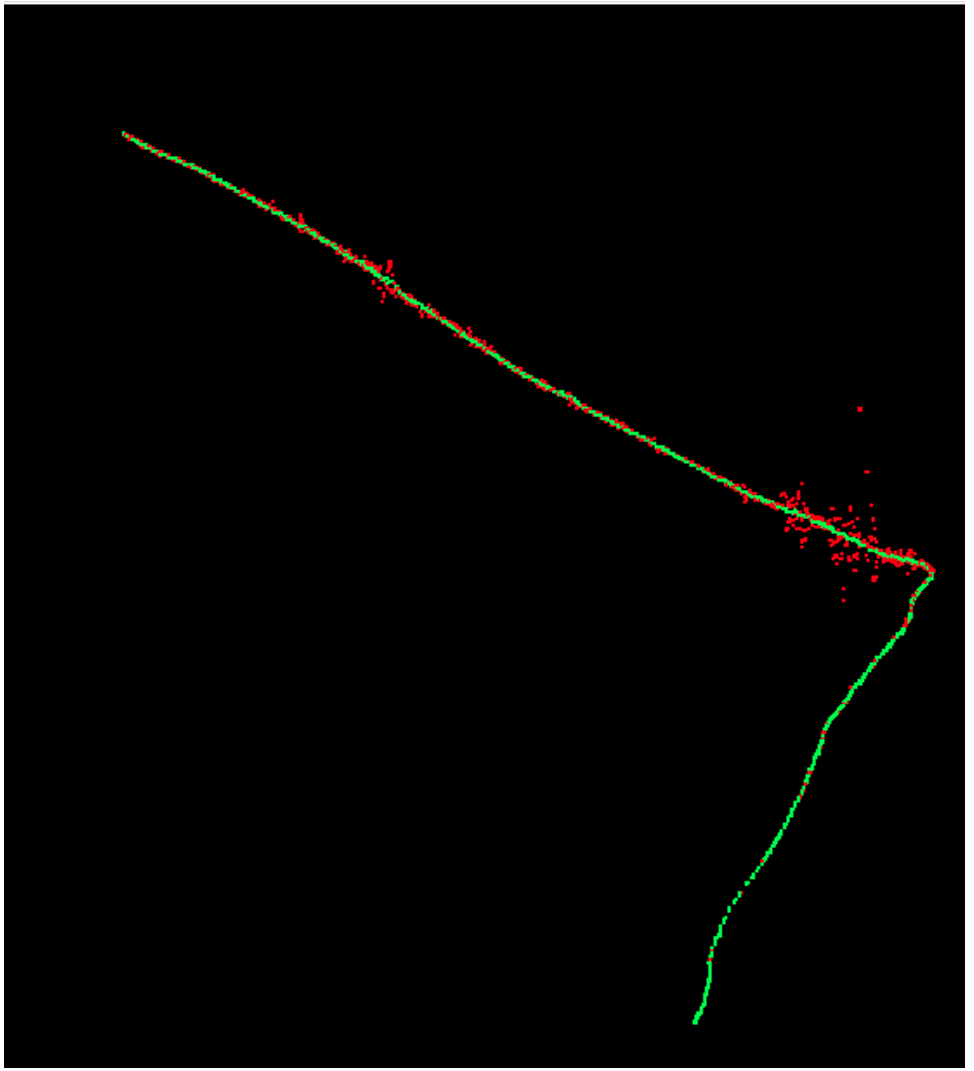
Example Event Display



Example 3D Event Displays



Unfiltered Space Points



Filtered + Truth Space Points